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MEMORANDUM

DATE 11 January 1999

TO: David Bennett, WAM, U.S. EPA, Region X

FROM: Michelle Turner, Chemist, WESTON, Seattle
RNM Roger McGinnis, Senior Environmental Chemist, WESTON, Seattle

SUBJECT: Validation of Polychlorinated Biphenyls (Congeners) Data
X Laboratory Batch: K9806584
Site: Duwamish River

WORK ASSIGNMENT NO: 46-23-0JZZ

WORK ORDER NO.: 4000-019-038-5200-00

DOC CONTROL NO : 4000-019-038-AAAK

cc. Bruce Woods, RAP-WAM, U.S. EPA, Region X
Dena Hughes, Site Manager, WESTON, Seattle (memo only)
Kevin Mundell-Jackson, Database Management, WESTON, Seattle

The quality assurance review of fifteen sediment samples, laboratory batch K9806584, collected from the Duwamish River has been completed. Samples were analyzed for polychlorinated biphenyls as individual congeners using EPA Method 8082 by Columbia Analytical Services of Kelso, Washington. The samples were numbered:

98394020	98394021	98394022	98394023	98394024
98394025	98394026	98394027	98394028	98394029
98394030	98394031	98394032	98394033	98394034

Data Qualifications

The following comments refer to the laboratory performance in meeting the quality control criteria described in the technical specifications of the laboratory subcontract. The review follows the format described in the *National Functional Guidelines for Organic Data Review* (EPA OSWER Directive 9240 1-05, February 1994).

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QA Review Batch K9806584 (PCB Congeners)

Site Duwamish River

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1. Timeliness

All samples were extracted 50 days after sample collection, exceeding the 14 day holding time criteria in the Sampling and Analysis Plan. However, prior to extraction, samples were stored frozen, thus extending the holding time. Samples were extracted within the 12 month holding time recommended by PSEP for frozen samples.

2. Initial Calibration

A six point initial calibration was performed using tetrachloro-meta-xylene (TCMX) as an internal standard. Relative response factors (RRF) were calculated for each target congener. The RRF percent relative standard deviation (%RSD) was less than 20 percent for all analytes, otherwise, regression was used for quantitation

3 Calibration Verification

Calibration verification standards were analyzed every 12 hours using a midrange standard. The RRF percent difference was less than 25 percent of the initial calibration value

4. Retention Time Windows

Relative Retention Time Windows were calculated from initial calibration. Retention times for calibration verification standards were within established windows of ± 0.06 RRT.

5. Detection Limits

Instrument detection limits met project required quantitation limits with the following exceptions:

Sample	Compound	QL Goal ($\mu\text{g}/\text{Kg}$)	Reported QL ($\mu\text{g}/\text{Kg}$)
98394021	PCB123	1	4
98394021	PCB114	1	2
98394024	PCB77	1	5
98394024	PCB114	1	3

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Sample	Compound	QL Goal (μ Kg)	Reported QL (μ g/Kg)
98394027	PCB77	1	2
98394027	PCB123	1	2
98394027	PCB170	1	7
98394030	PCB123	1	2
98394031	PCB77	1	2
98394031	PCB123	1	4
98394032	PCB123	1	2

Where quantitation limit goals were exceeded, undetected analytes were qualified (UI) to indicate matrix interference.

6. Blanks

a) Laboratory Method Blanks

Laboratory method blank frequency criteria were met

No target analytes were reported in laboratory method blanks.

b) Field Blanks

No field blanks were associated with this laboratory batch.

7. System Monitoring Compounds (Surrogates)

Surrogate compound percent recoveries met quality control criteria for all samples

8. Matrix Spike and Matrix Spike Duplicate

All matrix spike (MS) and matrix spike duplicate (MSD) percent recoveries met QC guidelines All relative percent differences between the MS and MSD recoveries were within QC guidelines

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9 Laboratory Control Sample (LCS) Analysis

All LCS percent recoveries met QC guidelines

10. Field Duplicate Analysis

Samples 98394027 and 98394029 were field duplicates. Analytes were detected in sample 98394027, but not detected in sample 98394029. Results were qualified as estimated (J).

Samples 98394028 and 98394030 were field duplicates. Analytes were detected in sample 98394030, but not detected in sample 98394028. Results were qualified as estimated (J).

11. Second Column Confirmation

The relative percent difference (RPD) in reported analyte concentration was greater than 35 percent for the primary and confirmation column for the following samples:

Sample Number	Compound	DB-5 Conc (μ g/Kg)	DB-1701 Conc (μ g/Kg)	RPD
98394020	PCB18	1	2	67
98394020	PCB28	1	2	67
98394020	PCB101	2	4	67
98394020	PCB138	6	3	67
98394020	PCB187	3	2	40
98394020	PCB170	3	2	40
98394021	PCB18	7	14	67
98394021	PCB28	9	16	56
98394021	PCB101	17	33	64
98394021	PCB123	59	3	181
98394021	PCB114	2	10	133
98394021	PCB138	68	39	54
98394021	PCB167	2	4	67

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Sample Number	Compound	DB-5 Conc (µg/Kg)	DB-1701 Conc (µg/Kg)	RPD
98394021DIL	PCB18	2350	11	198
98394021DIL	PCB28	3	19	145
98394021DIL	PCB101	21	41	65
98394021DIL	PCB123	75	4	180
98394021DIL	PCB114	2	28	173
98394021DIL	PCB138	82	46	56
98394021DIL	PCB167	3	5	50
98394021DIL	PCB156	7	13	60
98394023	PCB18	1	2	67
98394023	PCB28	2	3	40
98394023	PCB44	2	4	67
98394023	PCB101	4	7	55
98394023	PCB123	9	2	127
98394023	PCB105	3	2	40
98394023	PCB138	12	7	53
98394023	PCB128	2	3	40
98394023	PCB209	274	2	197
98394024	PCB18	14	23	49
98394024	PCB28	22	47	72
98394024	PCB101	40	71	56
98394024	PCB77	149	4	190
98394024	PCB114	3	13	125
98394024	PCB138	107	52	69
98394024	PCB157	4	2	67
98394024	PCB189	1	2	67
98394024	PCB209	2	1	67
98394024DIL	PCB18	18	30	50

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Sample Number	Compound	DB-5 Conc (µg/Kg)	DB-1701 Conc (µg/Kg)	RPD
98394024DIL	PCB28	30	51	52
98394024DIL	PCB101	47	90	63
98394024DIL	PCB77	157	4	190
98394024DIL	PCB114	3	2	40
98394024DIL	PCB105	39	23	52
98394024DIL	PCB138	112	59	62
98394024DIL	PCB189	3	2	40
98394024DIL	PCB195	7	4	55
98394024DIL	PCB206	7	4	55
98394024DIL	PCB209	2	3	40
98394027	PCB18	5	8	46
98394027	PCB28	7	12	53
98394027	PCB101	7	12	53
98394027	PCB77	25	1	185
98394027	PCB123	17	1	178
98394027	PCB138	19	10	62
98394027	PCB156	2	1	67
98394027	PCB170	22	7	103
98394027	PCB195	2	1	67
98394030	PCB28	2	3	40
98394030	PCB52	6	9	40
98394030	PCB101	8	16	67
98394030	PCB123	37	1	189
98394030	PCB138	44	23	63
98394030	PCB167	1	2	67
98394031	PCB18	6	12	67
98394031	PCB28	13	19	38

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Sample Number	Compound	DB-5 Conc (µg/Kg)	DB-1701 Conc (µg/Kg)	RPD
98394031	PCB101	15	27	57
98394031	PCB77	68	2	189
98394031	PCB123	27	3	160
98394031	PCB114	1	5	133
98394031	PCB138	40	21	62
98394031	PCB206	2	1	67
98394032	PCB52	5	9	57
98394032	PCB101	3	5	50
98394032	PCB123	7	1	150
98394032	PCB105	3	2	40
98394032	PCB138	11	7	44
98394032	PCB128	2	3	40
98394032	PCB156	2	4	67
98394032	PCB206	2	1	67
98394033	PCB18	1	2	67
98394033	PCB101	3	6	67
98394033	PCB138	9	5	57
98394034	PCB18	2	3	40
98394034	PCB28	3	5	50
98394034	PCB101	5	9	57
98394034	PCB138	14	7	67

Differences can arise from analytical interferences on one column. The lower concentration was reported for each analyte, unless interferences or coelution prevented use of the lower concentration



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12 Sample Analysis

A cursory review of raw data was performed. All laboratory deliverables were present and complete. A duplicate analysis was performed on sample 98394029; no analytes were detected in the sample or replicate. The case narrative verifies that samples were stored frozen until extraction. No complications were noted.

13. Laboratory Contact

The laboratory was not contacted.

Data Assessment

Upon consideration of the data qualifications noted above, the data are ACCEPTABLE for use except where flagged with data qualifiers that modify the usefulness of the individual values

Data Qualifiers

U - The compound was analyzed for, but was not detected

UJ - The compound was analyzed for, but was not detected. The associated quantitation limit is an estimate because quality control criteria were not met.

J - The analyte was positively identified, but the associated numerical value is an estimated quantity because quality control criteria were not met or because concentrations reported are less than CRDL or lowest calibration standard

R - Quality control indicates that data are unusable (compound may or may not be present). Resampling and reanalysis are necessary for verification

N - Presumptive evidence of presence of material (tentative identification)

I - Elevated reporting limit due to matrix interference.

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

Service Request: K9806584
Date Collected: 9/22/98
Date Received: 9/23/98

Congener Specific PCBs

Sample Name	98394020	Units	ug/Kg (ppb)
Lab Code	K9806584-001	Basis	Dry
Test Notes			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
PCB 18	EPA 3550B	8082	1	1	11/11/98	11/19/98	1	
PCB 28	EPA 3550B	8082	1	1	11/11/98	11/19/98	1	
PCB 52	EPA 3550B	8082	1	1	11/11/98	11/19/98	3	
PCB 44	EPA 3550B	8082	1	1	11/11/98	11/19/98	2	
PCB 66	EPA 3550B	8082	1	1	11/11/98	11/19/98	5	
PCB 101	EPA 3550B	8082	1	1	11/11/98	11/19/98	4	
PCB 81	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 77	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 123	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 118	EPA 3550B	8082	1	1	11/11/98	11/19/98	3	
PCB 114	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 153	EPA 3550B	8082	1	1	11/11/98	11/19/98	4	
PCB 105	EPA 3550B	8082	1	1	11/11/98	11/19/98	1	
PCB 138	EPA 3550B	8082	1	1	11/11/98	11/19/98	6	
PCB 126	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 187	EPA 3550B	8082	1	1	11/11/98	11/19/98	2	
PCB 128	EPA 3550B	8082	1	1	11/11/98	11/19/98	1	
PCB 167	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 156	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 157	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 180	EPA 3550B	8082	1	1	11/11/98	11/19/98	3	
PCB 169	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 170	EPA 3550B	8082	1	1	11/11/98	11/19/98	2	
PCB 189	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 195	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 206	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 209	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	

Approved By



Date 11-24-98

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

Service Request: K9806584
Date Collected: 9/22/98
Date Received: 9/23/98

Congener Specific PCBs

Sample Name	98394021	Units	ug/Kg (ppb)
Lab Code	K9806584-002	Basis	Dry
Test Notes			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
PCB 18	EPA 3550B	8082	1	1	11/11/98	11/19/98	7	
PCB 28	EPA 3550B	8082	1	1	11/11/98	11/19/98	9	
PCB 52	EPA 3550B	8082	1	1	11/11/98	11/19/98	29	
PCB 44	EPA 3550B	8082	1	1	11/11/98	11/19/98	12	
PCB 66	EPA 3550B	8082	1	1	11/11/98	11/19/98	36	
PCB 101	EPA 3550B	8082	1	1	11/11/98	11/19/98	34	
PCB 81	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 77	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 123	EPA 3550B	8082	4	1	11/11/98	11/19/98	ND	WT B
PCB 118	EPA 3550B	8082	1	1	11/11/98	11/19/98	22	
PCB 114	EPA 3550B	8082	2	1	11/11/98	11/19/98	ND	WT B
PCB 153	EPA 3550B	8082	10	10	11/11/98	11/20/98	72	
PCB 105	EPA 3550B	8082	1	1	11/11/98	11/19/98	8	
PCB 138	EPA 3550B	8082	10	10	11/11/98	11/20/98	82	
PCB 126	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 187	EPA 3550B	8082	1	1	11/11/98	11/19/98	28	
PCB 128	EPA 3550B	8082	1	1	11/11/98	11/19/98	8	
PCB 167	EPA 3550B	8082	1	1	11/11/98	11/19/98	2	
PCB 156	EPA 3550B	8082	1	1	11/11/98	11/19/98	6	
PCB 157	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 180	EPA 3550B	8082	1	1	11/11/98	11/19/98	53	
PCB 169	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 170	EPA 3550B	8082	1	1	11/11/98	11/19/98	29	
PCB 189	- EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 195	EPA 3550B	8082	1	1	11/11/98	11/19/98	6	
PCB 206	EPA 3550B	8082	1	1	11/11/98	11/19/98	3	
PCB 209	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	

B The MRL is elevated because of matrix interferences

Approved By Jay 1844021397p

Date 11-24-98

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

Service Request: K9806584
Date Collected: 9/22/98
Date Received: 9/23/98

Congener Specific PCBs

Sample Name	98394022	Units	ug/Kg (ppb)
Lab Code	K9806584-003	Basis	Dry
Test Notes			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
PCB 18	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 28	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 52	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 44	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 66	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 101	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 81	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 77	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 123	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 118	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 114	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 153	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 105	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 138	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 126	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 187	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 128	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 167	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 156	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 157	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 180	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 169	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 170	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 189	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 195	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 206	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 209	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

Service Request: K9806584
Date Collected: 9/22/98
Date Received: 9/23/98

Congener Specific PCBs

Sample Name	98394023	Units	ug/Kg (ppb)
Lab Code	K9806584-004	Basis	Dry
Test Notes			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
PCB 18	EPA 3550B	8082	1	1	11/11/98	11/19/98	1	
PCB 28	EPA 3550B	8082	1	1	11/11/98	11/19/98	2	
PCB 52	EPA 3550B	8082	1	1	11/11/98	11/19/98	5	
PCB 44	EPA 3550B	8082	1	1	11/11/98	11/19/98	4	
PCB 66	EPA 3550B	8082	1	1	11/11/98	11/19/98	8	
PCB 101	EPA 3550B	8082	1	1	11/11/98	11/19/98	8	
PCB 81	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 77	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 123	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 118	EPA 3550B	8082	1	1	11/11/98	11/19/98	6	
PCB 114	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 153	EPA 3550B	8082	1	1	11/11/98	11/19/98	9	
PCB 105	EPA 3550B	8082	1	1	11/11/98	11/19/98	2	
PCB 138	EPA 3550B	8082	1	1	11/11/98	11/19/98	11	
PCB 126	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 187	EPA 3550B	8082	1	1	11/11/98	11/19/98	4	
PCB 128	EPA 3550B	8082	1	1	11/11/98	11/19/98	2	
PCB 167	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 156	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 157	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 180	EPA 3550B	8082	1	1	11/11/98	11/19/98	6	
PCB 169	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 170	EPA 3550B	8082	1	1	11/11/98	11/19/98	3	
PCB 189	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 195	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 206	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 209	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	

Approved By

Jay

Date

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

Service Request: K9806584
Date Collected: 9/23/98
Date Received: 9/24/98

Congener Specific PCBs

Sample Name	98394030	Units	ug/Kg (ppb)
Lab Code	K9806584-005	Basis.	Dry
Test Notes:			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
PCB 18	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 28	EPA 3550B	8082	1	1	11/11/98	11/19/98	2	J
PCB 52	EPA 3550B	8082	1	1	11/11/98	11/19/98	6	
PCB 44	EPA 3550B	8082	1	1	11/11/98	11/19/98	4	
PCB 66	EPA 3550B	8082	1	1	11/11/98	11/19/98	15	
PCB 101	EPA 3550B	8082	1	1	11/11/98	11/19/98	16	↓
PCB 81	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 77	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 123	EPA 3550B	8082	2	1	11/11/98	11/19/98	ND	WI B
PCB 118	EPA 3550B	8082	1	1	11/11/98	11/19/98	9	J
PCB 114	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 153	EPA 3550B	8082	1	1	11/11/98	11/19/98	37	J
PCB 105	EPA 3550B	8082	1	1	11/11/98	11/19/98	3	
PCB 138	EPA 3550B	8082	1	1	11/11/98	11/19/98	44	↓
PCB 126	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 187	EPA 3550B	8082	1	1	11/11/98	11/19/98	20	J
PCB 128	EPA 3550B	8082	1	1	11/11/98	11/19/98	4	
PCB 167	EPA 3550B	8082	1	1	11/11/98	11/19/98	1	
PCB 156	EPA 3550B	8082	1	1	11/11/98	11/19/98	3	↓
PCB 157	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 180	EPA 3550B	8082	1	1	11/11/98	11/19/98	37	J
PCB 169	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 170	EPA 3550B	8082	1	1	11/11/98	11/19/98	20	J
PCB 189	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 195	EPA 3550B	8082	1	1	11/11/98	11/19/98	4	J
PCB 206	EPA 3550B	8082	1	1	11/11/98	11/19/98	2	J
PCB 209	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	

B

The MRL is elevated because of matrix interferences

Approved By

JW

Date

11-24/98

WGT/13/99

00062

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

Service Request: K9806584
Date Collected: 9/23/98
Date Received: 9/24/98

Congener Specific PCBs

Sample Name	98394031	Units	ug/Kg (ppb)
Lab Code	K9806584-006	Basis	Dry
Test Notes			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
PCB 18	EPA 3550B	8082	1	1	11/11/98	11/19/98	6	
PCB 28	EPA 3550B	8082	1	1	11/11/98	11/19/98	13	
PCB 52	EPA 3550B	8082	1	1	11/11/98	11/19/98	22	
PCB 44	EPA 3550B	8082	1	1	11/11/98	11/19/98	14	
PCB 66	EPA 3550B	8082	1	1	11/11/98	11/19/98	34	
PCB 101	EPA 3550B	8082	1	1	11/11/98	11/19/98	27	
PCB 81	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 77	EPA 3550B	8082	2	1	11/11/98	11/19/98	ND	WT
PCB 123	EPA 3550B	8082	4	1	11/11/98	11/19/98	ND	↓ B
PCB 118	EPA 3550B	8082	1	1	11/11/98	11/19/98	24	
PCB 114	EPA 3550B	8082	1	1	11/11/98	11/19/98	2	
PCB 153	EPA 3550B	8082	1	1	11/11/98	11/19/98	26	
PCB 105	EPA 3550B	8082	1	1	11/11/98	11/19/98	13	
PCB 138	EPA 3550B	8082	1	1	11/11/98	11/19/98	40	
PCB 126	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 187	EPA 3550B	8082	1	1	11/11/98	11/19/98	9	
PCB 128	EPA 3550B	8082	1	1	11/11/98	11/19/98	7	
PCB 167	EPA 3550B	8082	1	1	11/11/98	11/19/98	2	
PCB 156	EPA 3550B	8082	1	1	11/11/98	11/19/98	4	
PCB 157	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 180	EPA 3550B	8082	1	1	11/11/98	11/19/98	14	
PCB 169	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 170	EPA 3550B	8082	1	1	11/11/98	11/19/98	9	
PCB 189	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 195	EPA 3550B	8082	1	1	11/11/98	11/19/98	2	
PCB 206	EPA 3550B	8082	1	1	11/11/98	11/19/98	1	
PCB 209	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	

Approved By
IS44/021397p

Date 11-24-98

00064
Page No

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

Service Request: K9806584
Date Collected: 9/23/98
Date Received: 9/24/98

Congener Specific PCBs

Sample Name	98394032	Units	ug/Kg (ppb)
Lab Code	K9806584-007	Basis	Dry
Test Notes			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
PCB 18	EPA 3550B	8082	1	1	11/11/98	11/20/98	ND	
PCB 28	EPA 3550B	8082	1	1	11/11/98	11/20/98	3	
PCB 52	EPA 3550B	8082	1	1	11/11/98	11/20/98	5	
PCB 44	EPA 3550B	8082	1	1	11/11/98	11/20/98	3	
PCB 66	EPA 3550B	8082	1	1	11/11/98	11/20/98	8	
PCB 101	EPA 3550B	8082	1	1	11/11/98	11/20/98	5	
PCB 81	EPA 3550B	8082	1	1	11/11/98	11/20/98	ND	
PCB 77	EPA 3550B	8082	1	1	11/11/98	11/20/98	ND	
PCB 123	EPA 3550B	8082	2	1	11/11/98	11/20/98	ND	WT B
PCB 118	EPA 3550B	8082	1	1	11/11/98	11/20/98	5	
PCB 114	EPA 3550B	8082	1	1	11/11/98	11/20/98	ND	
PCB 153	EPA 3550B	8082	1	1	11/11/98	11/20/98	8	
PCB 105	EPA 3550B	8082	1	1	11/11/98	11/20/98	2	
PCB 138	EPA 3550B	8082	1	1	11/11/98	11/20/98	11	
PCB 126	EPA 3550B	8082	1	1	11/11/98	11/20/98	ND	
PCB 187	EPA 3550B	8082	1	1	11/11/98	11/20/98	4	
PCB 128	EPA 3550B	8082	1	1	11/11/98	11/20/98	2	
PCB 167	EPA 3550B	8082	1	1	11/11/98	11/20/98	ND	
PCB 156	EPA 3550B	8082	1	1	11/11/98	11/20/98	ND	
PCB 157	EPA 3550B	8082	1	1	11/11/98	11/20/98	ND	
PCB 180	EPA 3550B	8082	1	1	11/11/98	11/20/98	6	
PCB 169	EPA 3550B	8082	1	1	11/11/98	11/20/98	ND	
PCB 170	EPA 3550B	8082	1	1	11/11/98	11/20/98	3	
PCB 189	EPA 3550B	8082	1	1	11/11/98	11/20/98	ND	
PCB 195	EPA 3550B	8082	1	1	11/11/98	11/20/98	1	
PCB 206	EPA 3550B	8082	1	1	11/11/98	11/20/98	1	
PCB 209	EPA 3550B	8082	1	1	11/11/98	11/20/98	ND	

B

The MRL is elevated because of matrix interferences

Approved By
IS44021397p



Date 11-24-98



00066

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

Service Request: K9806584
Date Collected: 9/23/98
Date Received: 9/24/98

Congener Specific PCBs

Sample Name	98394033	Units	ug/Kg (ppb)
Lab Code	K9806584-008	Basis	Dry
Test Notes			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
PCB 18	EPA 3550B	8082	1	1	11/11/98	11/20/98	1	
PCB 28	EPA 3550B	8082	1	1	11/11/98	11/20/98	ND	
PCB 52	EPA 3550B	8082	1	1	11/11/98	11/20/98	4	
PCB 44	EPA 3550B	8082	1	1	11/11/98	11/20/98	3	
PCB 66	EPA 3550B	8082	1	1	11/11/98	11/20/98	7	
PCB 101	EPA 3550B	8082	1	1	11/11/98	11/20/98	6	
PCB 81	EPA 3550B	8082	1	1	11/11/98	11/20/98	ND	
PCB 77	EPA 3550B	8082	1	1	11/11/98	11/20/98	ND	
PCB 123	EPA 3550B	8082	1	1	11/11/98	11/20/98	ND	
PCB 118	EPA 3550B	8082	1	1	11/11/98	11/20/98	4	
PCB 114	EPA 3550B	8082	1	1	11/11/98	11/20/98	ND	
PCB 153	EPA 3550B	8082	1	1	11/11/98	11/20/98	6	
PCB 105	EPA 3550B	8082	1	1	11/11/98	11/20/98	2	
PCB 138	EPA 3550B	8082	1	1	11/11/98	11/20/98	9	
PCB 126	EPA 3550B	8082	1	1	11/11/98	11/20/98	ND	
PCB 187	EPA 3550B	8082	1	1	11/11/98	11/20/98	3	
PCB 128	EPA 3550B	8082	1	1	11/11/98	11/20/98	2	
PCB 167	EPA 3550B	8082	1	1	11/11/98	11/20/98	ND	
PCB 156	EPA 3550B	8082	1	1	11/11/98	11/20/98	ND	
PCB 157	EPA 3550B	8082	1	1	11/11/98	11/20/98	ND	
PCB 180	EPA 3550B	8082	1	1	11/11/98	11/20/98	5	
PCB 169	EPA 3550B	8082	1	1	11/11/98	11/20/98	ND	
PCB 170	EPA 3550B	8082	1	1	11/11/98	11/20/98	3	
PCB 189	EPA 3550B	8082	1	1	11/11/98	11/20/98	ND	
PCB 195	EPA 3550B	8082	1	1	11/11/98	11/20/98	ND	
PCB 206	EPA 3550B	8082	1	1	11/11/98	11/20/98	ND	
PCB 209	EPA 3550B	8082	1	1	11/11/98	11/20/98	ND	

Approved By _____

Date 11-24-98

WAT/13799
00068

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

Service Request: K9806584
Date Collected: 9/23/98
Date Received: 9/24/98

Congener Specific PCBs

Sample Name	98394034	Units	ug/Kg (ppb)
Lab Code	K9806584-009	Basis	Dry
Test Notes			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
PCB 18	EPA 3550B	8082	1	1	11/11/98	11/20/98	2	
PCB 28	EPA 3550B	8082	1	1	11/11/98	11/20/98	3	
PCB 52	EPA 3550B	8082	1	1	11/11/98	11/20/98	6	
PCB 44	EPA 3550B	8082	1	1	11/11/98	11/20/98	4	
PCB 66	EPA 3550B	8082	1	1	11/11/98	11/20/98	10	
PCB 101	EPA 3550B	8082	1	1	11/11/98	11/20/98	9	
PCB 81	EPA 3550B	8082	1	1	11/11/98	11/20/98	ND	
PCB 77	EPA 3550B	8082	1	1	11/11/98	11/20/98	ND	
PCB 123	EPA 3550B	8082	1	1	11/11/98	11/20/98	ND	
PCB 118	EPA 3550B	8082	1	1	11/11/98	11/20/98	7	
PCB 114	EPA 3550B	8082	1	1	11/11/98	11/20/98	ND	
PCB 153	EPA 3550B	8082	1	1	11/11/98	11/20/98	11	
PCB 105	EPA 3550B	8082	1	1	11/11/98	11/20/98	3	
PCB 138	EPA 3550B	8082	1	1	11/11/98	11/20/98	14	
PCB 126	EPA 3550B	8082	1	1	11/11/98	11/20/98	ND	
PCB 187	EPA 3550B	8082	1	1	11/11/98	11/20/98	5	
PCB 128	EPA 3550B	8082	1	1	11/11/98	11/20/98	2	
PCB 167	EPA 3550B	8082	1	1	11/11/98	11/20/98	ND	
PCB 156	EPA 3550B	8082	1	1	11/11/98	11/20/98	1	
PCB 157	EPA 3550B	8082	1	1	11/11/98	11/20/98	ND	
PCB 180	EPA 3550B	8082	1	1	11/11/98	11/20/98	8	
PCB 169	EPA 3550B	8082	1	1	11/11/98	11/20/98	ND	
PCB 170	EPA 3550B	8082	1	1	11/11/98	11/20/98	5	
PCB 189	EPA 3550B	8082	1	1	11/11/98	11/20/98	ND	
PCB 195	EPA 3550B	8082	1	1	11/11/98	11/20/98	ND	
PCB 206	EPA 3550B	8082	1	1	11/11/98	11/20/98	ND	
PCB 209	EPA 3550B	8082	1	1	11/11/98	11/20/98	ND	

Approved By
IS44021397p



Date 11-24-98

11/24/98
00070
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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

Service Request: K9806584
Date Collected: 9/22/98
Date Received: 9/24/98

Congener Specific PCBs

Sample Name	98394024	Units	ug/Kg (ppb)
Lab Code	K9806584-010	Basis	Dry
Test Notes			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
PCB 18	EPA 3550B	8082	1	1	11/11/98	11/19/98	14	
PCB 28	EPA 3550B	8082	1	1	11/11/98	11/19/98	22	
PCB 52	EPA 3550B	8082	1	1	11/11/98	11/19/98	49	
PCB 44	EPA 3550B	8082	1	1	11/11/98	11/19/98	33	
PCB 66	EPA 3550B	8082	10	10	11/11/98	11/20/98	100	
PCB 101	EPA 3550B	8082	10	10	11/11/98	11/20/98	90	
PCB 81	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 77	EPA 3550B	8082	5	1	11/11/98	11/19/98	ND	WT B
PCB 123	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 118	EPA 3550B	8082	10	10	11/11/98	11/20/98	70	
PCB 114	EPA 3550B	8082	3	1	11/11/98	11/19/98	ND	WT B
PCB 153	EPA 3550B	8082	10	10	11/11/98	11/20/98	78	
PCB 105	EPA 3550B	8082	1	1	11/11/98	11/19/98	33	
PCB 138	EPA 3550B	8082	10	10	11/11/98	11/20/98	110	
PCB 126	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 187	EPA 3550B	8082	1	1	11/11/98	11/19/98	21	
PCB 128	EPA 3550B	8082	1	1	11/11/98	11/19/98	17	
PCB 167	EPA 3550B	8082	1	1	11/11/98	11/19/98	5	
PCB 156	EPA 3550B	8082	1	1	11/11/98	11/19/98	10	
PCB 157	EPA 3550B	8082	1	1	11/11/98	11/19/98	2	
PCB 180	EPA 3550B	8082	1	1	11/11/98	11/19/98	41	
PCB 169	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 170	EPA 3550B	8082	1	1	11/11/98	11/19/98	28	
PCB 189	EPA 3550B	8082	1	1	11/11/98	11/19/98	1	
PCB 195	EPA 3550B	8082	1	1	11/11/98	11/19/98	4	
PCB 206	EPA 3550B	8082	1	1	11/11/98	11/19/98	3	
PCB 209	EPA 3550B	8082	1	1	11/11/98	11/19/98	1	

B The MRL is elevated because of matrix interferences

Approved By



1844021397p

Date 11-24-98

WCT 11/3/99

00072

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

Service Request: K9806584
Date Collected: 9/23/98
Date Received: 9/24/98

Congener Specific PCBs

Sample Name	98394025	Units	ug/Kg (ppb)
Lab Code	K9806584-011	Basis	Dry
Test Notes			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
PCB 18	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 28	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 52	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 44	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 66	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 101	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 81	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 77	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 123	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 118	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 114	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 153	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 105	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 138	EPA 3550B	8082	1	1	11/11/98	11/19/98	2	
PCB 126	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 187	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 128	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 167	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 156	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 157	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 180	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 169	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 170	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 189	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 195	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 206	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 209	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	

Approved By

Jay

Date

11-24-98

100075

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

Service Request: K9806584
Date Collected: 9/23/98
Date Received: 9/24/98

Congener Specific PCBs

Sample Name	98394026	Units	ug/Kg (ppb)
Lab Code	K9806584-012	Basis	Dry
Test Notes			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
PCB 18	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 28	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 52	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 44	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 66	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 101	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 81	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 77	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 123	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 118	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 114	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 153	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 105	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 138	EPA 3550B	8082	1	1	11/11/98	11/19/98	1	
PCB 126	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 187	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 128	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 167	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 156	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 157	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 180	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 169	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 170	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 189	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 195	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 206	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 209	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	

Approved By

Jay

Date 11-24-98

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

Service Request: K9806584
Date Collected: 9/23/98
Date Received: 9/24/98

Congener Specific PCBs

Sample Name	98394027	Units	ug/Kg (ppb)
Lab Code	K9806584-013	Basis	Dry
Test Notes			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
PCB 18	EPA 3550B	8082	1	1	11/11/98	11/19/98	5	J
PCB 28	EPA 3550B	8082	1	1	11/11/98	11/19/98	7	
PCB 52	EPA 3550B	8082	1	1	11/11/98	11/19/98	14	
PCB 44	EPA 3550B	8082	1	1	11/11/98	11/19/98	10	
PCB 66	EPA 3550B	8082	1	1	11/11/98	11/19/98	18	
PCB 101	EPA 3550B	8082	1	1	11/11/98	11/19/98	12	
PCB 81	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 77	EPA 3550B	8082	2	1	11/11/98	11/19/98	ND	U/I
PCB 123	EPA 3550B	8082	2	1	11/11/98	11/19/98	ND	↓
PCB 118	EPA 3550B	8082	1	1	11/11/98	11/19/98	9	J
PCB 114	EPA 3550B	8082	1	1	11/11/98	11/19/98	5	
PCB 153	EPA 3550B	8082	1	1	11/11/98	11/19/98	14	
PCB 105	EPA 3550B	8082	1	1	11/11/98	11/19/98	4	
PCB 138	EPA 3550B	8082	1	1	11/11/98	11/19/98	19	↓
PCB 126	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 187	EPA 3550B	8082	1	1	11/11/98	11/19/98	7	J
PCB 128	EPA 3550B	8082	1	1	11/11/98	11/19/98	3	J
PCB 167	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 156	EPA 3550B	8082	1	1	11/11/98	11/19/98	1	J
PCB 157	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 180	EPA 3550B	8082	1	1	11/11/98	11/19/98	13	J
PCB 169	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 170	EPA 3550B	8082	7	1	11/11/98	11/19/98	ND	U/I
PCB 189	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 195	EPA 3550B	8082	1	1	11/11/98	11/19/98	1	J
PCB 206	EPA 3550B	8082	1	1	11/11/98	11/19/98	1	J
PCB 209	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	

B The MRL is elevated because of matrix interferences

Approved By
IS46/021397p

Date 11-24-98

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

Service Request: K9806584
Date Collected: 9/23/98
Date Received: 9/24/98

Congener Specific PCBs

Sample Name	98394028	Units	ug/Kg (ppb)
Lab Code	K9806584-014	Basis	Dry
Test Notes			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
PCB 18	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 28	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 52	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 44	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 66	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 101	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 81	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 77	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 123	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 118	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 114	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 153	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 105	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 138	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 126	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 187	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 128	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 167	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 156	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 157	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 180	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 169	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 170	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 189	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 195	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 206	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	
PCB 209	EPA 3550B	8082	1	1	11/11/98	11/19/98	ND	

Approved By

Jerry

Date

11-24-98

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Roy F Weston, Inc
Project: Duwamish River/4000-027-001-2019-38
Sample Matrix: Sediment

Service Request: K9806584
Date Collected: 9/23/98
Date Received: 9/24/98

Congener Specific PCBs

Sample Name	98394029	Units	ug/Kg (ppb)
Lab Code	K9806584-015	Basis	Dry
Test Notes			

Analyte	Prep Method	Analysis Method	MRL	Dilution Factor	Date Extracted	Date Analyzed	Result	Result Notes
PCB 18	EPA 3550B	8082	1	1	11/11/98	11/20/98	ND	
PCB 28	EPA 3550B	8082	1	1	11/11/98	11/20/98	ND	
PCB 52	EPA 3550B	8082	1	1	11/11/98	11/20/98	ND	
PCB 44	EPA 3550B	8082	1	1	11/11/98	11/20/98	ND	
PCB 66	EPA 3550B	8082	1	1	11/11/98	11/20/98	ND	
PCB 101	EPA 3550B	8082	1	1	11/11/98	11/20/98	ND	
PCB 81	EPA 3550B	8082	1	1	11/11/98	11/20/98	ND	
PCB 77	EPA 3550B	8082	1	1	11/11/98	11/20/98	ND	
PCB 123	EPA 3550B	8082	1	1	11/11/98	11/20/98	ND	
PCB 118	EPA 3550B	8082	1	1	11/11/98	11/20/98	ND	
PCB 114	EPA 3550B	8082	1	1	11/11/98	11/20/98	ND	
PCB 153	EPA 3550B	8082	1	1	11/11/98	11/20/98	ND	
PCB 105	EPA 3550B	8082	1	1	11/11/98	11/20/98	ND	
PCB 138	EPA 3550B	8082	1	1	11/11/98	11/20/98	ND	
PCB 126	EPA 3550B	8082	1	1	11/11/98	11/20/98	ND	
PCB 187	EPA 3550B	8082	1	1	11/11/98	11/20/98	ND	
PCB 128	EPA 3550B	8082	1	1	11/11/98	11/20/98	ND	
PCB 167	EPA 3550B	8082	1	1	11/11/98	11/20/98	ND	
PCB 156	EPA 3550B	8082	1	1	11/11/98	11/20/98	ND	
PCB 157	EPA 3550B	8082	1	1	11/11/98	11/20/98	ND	
PCB 180	EPA 3550B	8082	1	1	11/11/98	11/20/98	ND	
PCB 169	EPA 3550B	8082	1	1	11/11/98	11/20/98	ND	
PCB 170	EPA 3550B	8082	1	1	11/11/98	11/20/98	ND	
PCB 189	EPA 3550B	8082	1	1	11/11/98	11/20/98	ND	
PCB 195	EPA 3550B	8082	1	1	11/11/98	11/20/98	ND	
PCB 206	EPA 3550B	8082	1	1	11/11/98	11/20/98	ND	
PCB 209	EPA 3550B	8082	1	1	11/11/98	11/20/98	ND	

Approved By
IS44021397p

Date 11-24-98

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